ESC/VP21 Command User's Guide for Home Projector

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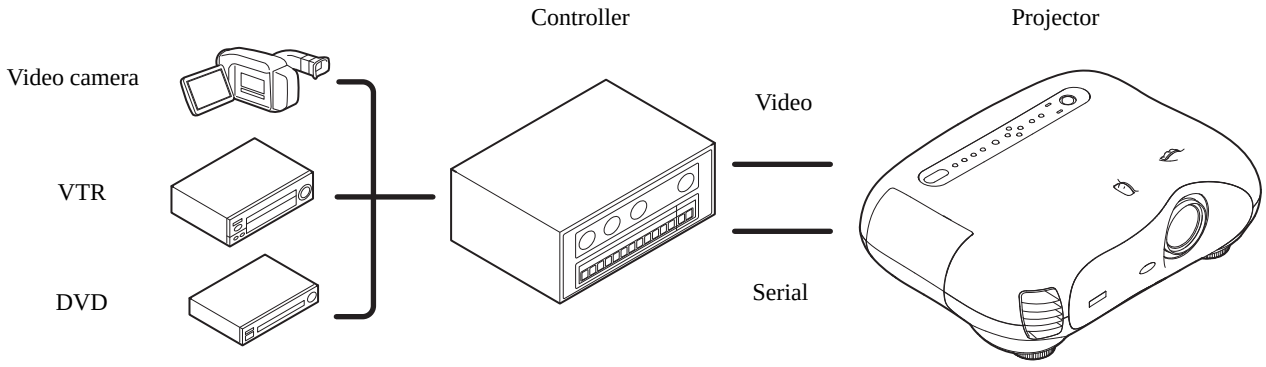
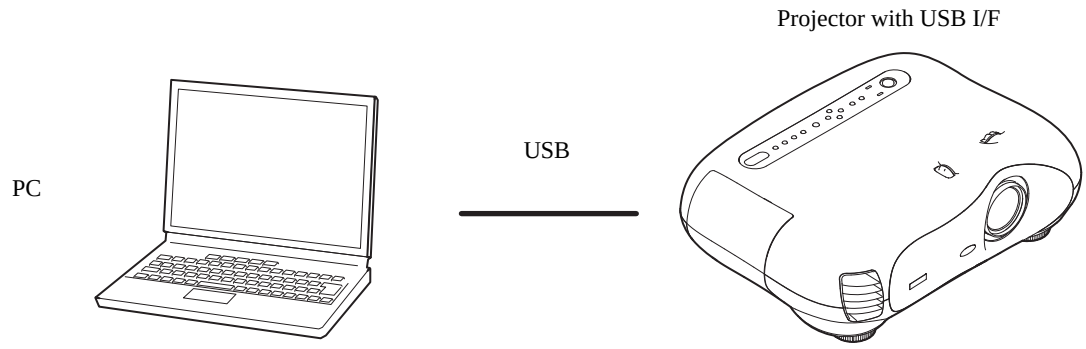
1.Introduction to ESC/VP21

ESC/VP21 is a control command and protocol for Epson projectors, which is used for A/V controller to control and monitor Epson projectors. The command codes are comprised of ASCII codes. Therefore the command codes can be understood very easily and you can easily control projectors using a PC with a terminal emulator such as Microsoft Hyper terminal.
Since ESC/VP21 is independent of communication protocols,Serial, USB or TCP/IP network can be used to transmit the commands to projectors.

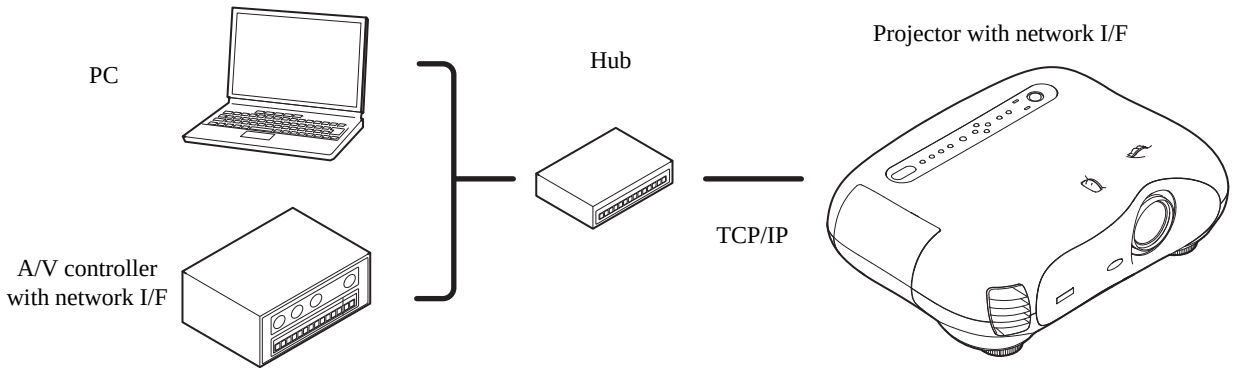
•Serial connection
A/V controllers normally use a serial connection to control projectors. Refer to Appendix for details.



•USB connection
A USB interface can be used to control a projector. Refer to Appendix for details.



•Network connection
After establishing a TCP session, ESC/VP21 commands can be sent to projectors. Refer to ESC/VP.net protocol manual.



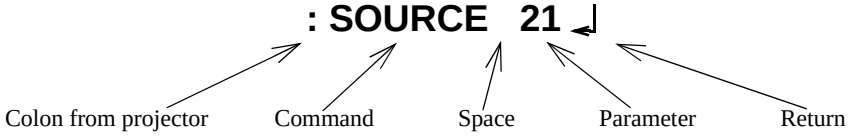
2.ESC/VP21 Command Formats

2.1.Set command format

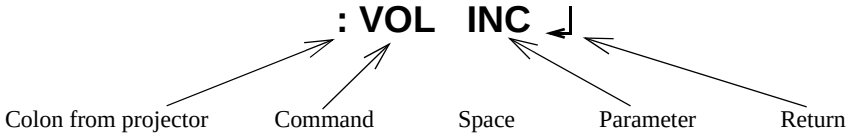
A set command consists of a command and a parameter. Projector returns a colon after executing the command.
There are two types of parameters. One is fixed such as ON, OFF, or 21.Other is a step parameter such as INC, DEC or INIT.

INC increments the parameter by one.
DEC decrements the parameter by one.
INIT initializes the parameter.

Set command example 1



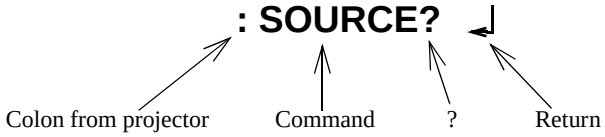
Set command example 2



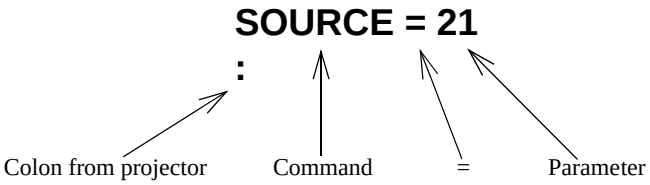
2.2.Get command format

A get command consists of a command and ?. Projector returns a response parameter after executing the command.

Get command example



Response parameter example



2.3.Null command

The null command is a command code of the return key code (Hex 0D). Projector returns a colon. The null command can be used to confirm that the projector is in operation.

2.4.Illegal commands

Projector returns “ERR” and a return key code (Hex 0D) and a colon when it receives invalid commands.

3.Applicable Models

EMP-TW100 / TW100H / TS10 / TW10 / TW200 / TW500 / TW10H / TW200H /TW20 / TW600,520,550,800 / TW700 / TW1000 / TW2000 / TW3000 / TW4000 / TW5000 / TW420

4.Command Table

Item		Command	All Models
Power ON/OF	ON	PWR ON	O(*1)
	OFF	PWR OFF	O
A/V Mute ON/OFF	ON	MUTE ON	O
	OFF	MUTE OFF	O
A/V Mute Screen	Black	MSEL 00	O
	Blue	MSEL 01	O
	User Logo	MSEL 02	O(*2)

(*1)The "PWR ON" command for **TW200 and TW200H** needs to prepare for use. First step is to turn on the projector. And then send the "SPWRLVL 01" command to the projector after the status of projector goes into the condition that the projector can receive ESC/VP21 command.
Second steps is to turn off the projector once. The "PWR ON" can work on **TW200 and TW200H** after the status of projector becomes the standby state.
•**TW500** needs to change the setting item to use "PWR ON" command. To validate the "PWR ON" command of **TW500**, "Network Monitoring" of "Operation" in "Setting" menu must be set to ON. The "PWR ON" command can work on **TW500** after the projector is turned off once and the status of projector becomes the standby state.
(*2)**TW10/TW10H** does not support the User Logo function.

Item	Terminal	Signal name	Command	TW100/ TW100H	TS10	TW10/ TW10H	TW200/ TW200H	TW500
Source change	INPUT 1/A	Cyclic within “SOURCE 1x”.	SOURCE 10	O	O	O(*3)	O	O
		Analog RGB	SOURCE 11	O	O	-	-	O
		Digital RGB	SOURCE 12	-	O	-	-	-
		RGB Video	SOURCE 13	-	O	O	O	O
		YCbCr(*4 Component)	SOURCE 14	-	-	O	O	O
		YPbPr(*4 Component)	SOURCE 15	-	-	O	O	O
		Auto	SOURCE 1F	-	-	-	-	O
	INPUT 2/B	Cyclic within “SOURCE 2x”.	SOURCE 20	O	O	O(*3)	O	O
		Analog RGB	SOURCE 21	O	O	O	O	O
		RGB Video	SOURCE 22	-	O	-	-	-
		YCbCr(*5 RGB Video)	SOURCE 23	O	O	-	-	O
		YPbPr(*5 YCbCr)	SOURCE 24	O	O	-	-	O
		YPbPr	SOURCE 25	-	-	-	-	O
		Auto	SOURCE 2F	-	-	-	-	O
	INPUT 3	Cyclic within “SOURCE 3x”.	SOURCE 30	-	-	-	-	O
		Digital RGB	SOURCE 31	O	-	-	-	-
	INPUT 5	Cyclic within “SOURCE Cx”.	SOURCE C0	-	-	-	O	O
		YCbCr	SOURCE C4	-	-	-	O	O
		YPbPr	SOURCE C5	-	-	-	O	O
		Auto	SOURCE CF	-	-	-	-	O
	VIDEO	Cyclic within “SOURCE 4X”.	SOURCE 40	O	O	O	O	O
	VIDEO(RCA)	-	SOURCE 41	O	O	O	O	O
	VIDEO(S)	-	SOURCE 42	O	O	O	O	O
	VIDEO(YCbCr)	-	SOURCE 43	O	-	-	-	-
	VIDEO(YPbPr)	-	SOURCE 44	O	-	-	-	-

Item	Terminal	Signal name	Command	TW20	TW600/ 520/550/ 800	TW700	TW1000	TW2000
Source change	INPUT 1/A	Cyclic within “SOURCE 1x”.	SOURCE 10	O	O	O	O	O
		Analog RGB	SOURCE 11	-	-	-	-	-
		Digital RGB	SOURCE 12	-	-	-	-	-
		RGB Video	SOURCE 13	O	-	-	-	-
		YCbCr(*4 Component)	SOURCE 14	O	O	O	O	O
		YPbPr(*4 Component)	SOURCE 15	O	O	O	O	O
		Auto	SOURCE 1F	-	O	O	O	O
	INPUT 2/B	Cyclic within “SOURCE 2x”.	SOURCE 20	O	O	O	O	O
		Analog RGB	SOURCE 21	O	O	O	O	O
		RGB Video	SOURCE 22	-	-	-	-	-
		YCbCr(*5 RGB Video)	SOURCE 23	-	-	-	-	-
		YPbPr(*5 YCbCr)	SOURCE 24	-	-	-	-	-
		YPbPr	SOURCE 25	-	-	-	-	-
		Auto	SOURCE 2F	-	-	-	-	-
	INPUT 3	Cyclic within “SOURCE 3x”.	SOURCE 30	-	O	O	O	O
		Digital RGB	SOURCE 31	-	-	-	-	-
	INPUT 5	Cyclic within “SOURCE Cx”.	SOURCE C0	-	O	O	O	-
		SCART(*6)	SOURCE C3		O	O	O	-
		YCbCr	SOURCE C4	-	O	O	O	-
		YPbPr	SOURCE C5	-	O	O	O	-
		Auto	SOURCE CF	-	O	O	O	-
	HDMI 2	HDMI	SOURCE A0	-	-	-	-	O
	VIDEO	Cyclic within “SOURCE 4X”.	SOURCE 40	O	O	O	O	O
	VIDEO(RCA)	-	SOURCE 41	O	O	O	O	O
	VIDEO(S)	-	SOURCE 42	O	O	O	O	O
	VIDEO(YCbCr)	-	SOURCE 43	-	-	-	-	-
	VIDEO(YPbPr)	-	SOURCE 44	-	-	-	-	-

Item	Terminal	Signal name	Command	TW3000/ TW4000/ TW5000	TW420
Source change	INPUT 1/A	Cyclic within “SOURCE 1x”.	SOURCE 10	O	O
		Analog RGB	SOURCE 11	-	O
		Digital RGB	SOURCE 12	-	
		RGB Video	SOURCE 13	-	
		YCbCr(*4 Component)	SOURCE 14	O	O(*7)
		YPbPr(*4 Component)	SOURCE 15	O	
		Auto	SOURCE 1F	O	O
	INPUT 2/B	Cyclic within “SOURCE 2x”.	SOURCE 20	O	
		Analog RGB	SOURCE 21	O	
		RGB Video	SOURCE 22	-	
		YCbCr(*5 RGB Video)	SOURCE 23	-	
		YPbPr(*5 YCbCr)	SOURCE 24	-	
		YPbPr	SOURCE 25	-	
		Auto	SOURCE 2F	-	
	INPUT 3	Cyclic within “SOURCE 3x”.	SOURCE 30	O	O
		Digital RGB	SOURCE 31	-	
	INPUT 5	Cyclic within “SOURCE Cx”.	SOURCE C0	-	
		SCART(*6)	SOURCE C3	-	
		YCbCr	SOURCE C4	-	
		YPbPr	SOURCE C5	-	
		Auto	SOURCE CF	-	
	HDMI 2	HDMI	SOURCE A0	O	
	VIDEO	Cyclic within “SOURCE 4X”.	SOURCE 40	O	
	VIDEO(RCA)	-	SOURCE 41	O	O
	VIDEO(S)	-	SOURCE 42	O	O
	VIDEO(YCbCr)	-	SOURCE 43	-	
	VIDEO(YPbPr)	-	SOURCE 44	-	

(*3)Only when **TW10** is connected, the source is not cycled within a signal that can select on a terminal by these commands.
(*4)This signal is selected when **TW10 and TW20** is connected.
(*5)This signal is selected when **TW500** is connected.
(*6)This signal is selected when **TW600/520/550/800/700/1000** is connected.
(*7)This command is can be used only for get.

5.Appendix

A projector and a computer can be connected using a serial or USB port. The projector can be remotely controlled by sending commands to the projector..

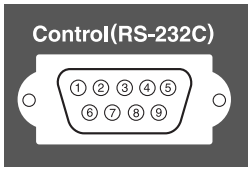
Serial Connection (TW100,TS10,TW10,TW200,TW500,TW10H,TW200H,TW20,TW600/520/550/800,TW700,TW1000,TW2000, TW3000/TW4000/TW5000)

- Select RS-232C at Advanced Setting of the Menu.
- Communication condition

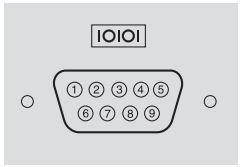
Baud rate	: 9600 bps
Data length	: 8 bits
Parity	: No
Stop bit	: 1 bit
Flow control	: No

- Connector : D-sub 9pin
- Projector input : Control(RS-232C)

<Projector>



<Computer>



<Projector>		(PC serial cable)	<Computer>	
GND	5	———	5	GND
RD	2	◄———	3	TD
TD	3	———►	2	RD

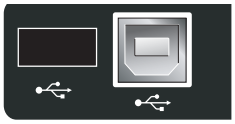
Signal name	Function
GND	Common ground
TD	Transmitted data
RD	Received data

*Theres no effect if DTR and DSR are not used.

USB Connection (TS10,TW200,TW500,TW200H,TW420)

- TS10, select USB at Advanced Setting of the Menu.
- Epson USB VCOM Driver has to be installed in your computer to use USB fpr communication.A COM port is added to your computer, when the projector and your computer is connected by a USB cable. The added COM is listed at PORT (COM/LPT) in the device manager tab of System in Control Panel as EPSON COM Emulation port (COMn).
- Connector : USB(B type)

<Projector>



<Computer>

Revision History

Revision	Issued Date	Page	Description
A	Oct 19,2005	All pages	First Release
B	Sep 29,2006	All pages	Addition of TW700
C	Mar 19,2007	All pages	Addition of TW1000
D	Jun 4,2007	5.p	Correction of “Applicable Model”.
E	Dec 14,2007	All pages	Addition of TW2000
F	Nov 14,2008	All pages	Addition of TW3000 and TW4000
G	Dec 2,2008	All pages	Addition of TW5000 and TW420